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RF filter design using LTCC and thin film BAW technolog

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Abstract

SAW technology is commonly used to provide RF front-end selectivity in many mobile ph. Their small size, high rejection and low insertion loss gives this technology a significant a competing approaches. However, although photolithographic advances continue to be m allowed SAW devices to operate at frequencies beyond several gigahertz, manufacturing slow. Also SAW RF power handling decreases with increasing frequency. In contrast thin wave (BAW) technology may be quite robust at frequencies up to and beyond 10 GHz. T can handle very reasonable power levels without the need for exotic metalization scheme resonators have higher Q and lower temperature coefficients than SAW devices using liti paper we describe the development of an RF filter based on thin film BAW resonators. Al stacked reflector type BAW resonators were used, fabricated on a sapphire substrate and metalization. The effective performance of the BAW resonators was enhanced with integri capacitors implemented within a low temperature, co-fired ceramic (LTCC) module. The l conveniently functions as a hermetic housing for the BAW die through the use of flip-chip vehicle for this demonstration we selected the CDMA transmitter inter-stage filter applica requirements are to provide a 60 MHz pass band response at 1880 MHz and to provide 3 beginning 20 MHz above the pass band. The complete filter form factor is 10 mm×6 mm frequency response achieves the required 3.5 dB maximum insertion loss in the Tx band range of -40C to +85C. Although this application does not require the filter to handle "high evaluated the lifetime potential for thin film BAW technology using this device by applying power at the maximum energy dissipation frequency near the upper pass band edge

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